

<b>TO:</b>	<b>CHAIR AND MEMBERS CIVIC WORKS COMMITTEE MEETING ON SEPTEMBER 25, 2018</b>
<b>FROM:</b>	<b>KELLY SCHERR, P.ENG., MBA, FEC MANAGING DIRECTOR ENVIRONMENTAL AND ENGINEERING SERVICES AND CITY ENGINEER</b>
<b>SUBJECT:</b>	<b>DOWNTOWN KING STREET CYCLING IMPROVEMENTS</b>

<b>RECOMMENDATION</b>
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That, on the recommendation of the Managing Director, Environmental and Engineering Services and City Engineer, the following actions be taken with respect to the Downtown King Street Cycling Improvements:

- (a) The information regarding initiatives to make King Street safer for cycling **BE RECEIVED** for information; and,
- (b) The King Street cycling facility alternative, identified herein as Alternative 1d, and generally described as a south side cycle track separated by parking and transit islands **BE IMPLEMENTED** in 2019.

<b>PREVIOUS REPORTS PERTINENT TO THIS MATTER</b>
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- Strategic Priorities and Policy Committee – January 28, 2016 – Downtown Infrastructure Planning and Coordination
- Civic Works Committee – September 7, 2016 – London ON Bikes Cycling Master Plan
- Civic Works Committee – October 4, 2016 – Infrastructure Canada Phase One Investments Public Transit Infrastructure Fund
- Civic Works Committee – January 10, 2017 – Queens Avenue and Colborne Street Cycle Tracks
- Civic Works Committee – September 26, 2017 – Transit Rerouting off Dundas Street in Downtown
- Planning and Environment Committee – December 4, 2017 – Parking Strategy for Downtown London

<b>2015-19 STRATEGIC PLAN</b>
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The Downtown King Street Cycling Improvements support the City's 2015-2019 Strategic Plan of building a sustainable city by implementing and enhancing safe mobility choices for all road users.

## BACKGROUND

### **Purpose**

On July 24, 2018, Council directed staff to complete the following actions for the King Street Bike Lanes;

- a) develop recommended options and associated costs that will enhanced safety for cyclists using the bike lane on King Street between Ridout Street and Colborne Street, and the new north-south cycle track with possible options that may include, but not limited to, reduced parking on the south side of King Street, installation of barriers, such as planters, to create a protected bike lane and appropriate signage; it being noted that there are physical constraints in this area, with frequent public transit stops located along this route;
- b) consult with affected stakeholders such as the London Transit Commission, the Downtown Business Improvement Association and the City of London Cycling Advisory Committee to seek input with respect to possible interim options to address the concerns raised by members of the public;
- c) enhance communication efforts to improve driver awareness of cyclists using King Street and the need to ensure the safety of all road users; and,
- d) request that the London Police Services increase enforcement in this area with a focus on driver behaviours that may adversely impact the safety of cyclists.

This report addresses the above action items and provides an in-depth analysis of eight bike lane improvement alternatives, with a staff recommendation for a preferred alternative for implementation.

### **Current Conditions and Related Initiatives**

Traffic volumes on King Street are higher than previous years, with approximately 3,450 vehicles during the morning peak period between 7:00 am and 9:00 am. A recent count identified 55 cyclists on King Street during this same time period. For context, a recent data for the Colborne Street cycle track identified 49 cyclists during the morning peak from 7:00 am – 9:00 am. The current congestion is a result of construction projects on the parallel Dundas Street and York Street routes. Dundas Street is closed for the construction of Dundas Place until late 2019. York Street (Thames Street to Talbot Street) is closed for sewer separation construction in 2018 and is planned to be closed again next year (Talbot St. to Clarence St.) for the second phase of a nine-phase downtown core sewer separation program. A future phase of the sewer separation project is planned on King Street between Richmond and Wellington. The King Street sewer separation may potentially commence as early as 2021 and would likely coincide with the implementation of BRT surface works, pending prior phases proceed as scheduled. Upon the completion of the Dundas and York Street construction, alternate routes will be available for cyclists. In particular, Dundas Place has been designed as a unique shared space street that will provide a more comfortable environment for active transportation including cycling.

The following provides a brief description of related initiatives.

### Transit Rerouting off Dundas

On September 13, 2016, Council passed a resolution directing Civic Administration to work with the London Transit Commission to move the existing bus routes in the downtown core section off Dundas Street. On September 25, 2017, staff, in coordination with LTC, presented a plan to support LTC transit rerouting onto King Street and Queens Avenue. The effect on King Street was predominantly the elimination and displacement of localized areas of on-street parking in the south parking lane to create dedicated space for bus stops.

Rerouting transit to King Street between Ridout Street and Wellington Street has resulted in one eastbound bus every 1 to 2 minutes during peak hours. Prior to rerouting transit the frequency of eastbound buses on King Street between Ridout Street and Wellington Street during peak hours was one bus every 7 minutes. The frequency of buses east of Wellington Street to Colborne Street are much less, at approximately one bus every 30 minutes. The increase in transit and traffic volumes from construction and transit rerouting creates operational challenges. The cycle lane is on the inside/north side of the parking lane and bus stops requiring buses to cross the cycle lane.

### Bus Rapid Transit

On May 16<sup>th</sup>, 2017, Council approved the Bus Rapid Transit (BRT) network which included a one-way transit couplet on King Street eastbound and Queens Avenue westbound. The current BRT plans include a one way cycle lane on King Street east of Wellington Street but no cycling facilities are currently proposed on King Street between Ridout Street and Wellington Street due to the corridor constraints. Construction of the Bus Rapid Transit program is anticipated to commence in the near term meaning that the infrastructure improvements identified in this report are short-term and would be removed upon construction of the BRT project.

### Queens Avenue Two-Way Cycle Track

The Cycling Master Plan identified a bidirectional cycle track on Queens Avenue through the Downtown. The goal of the Queens Avenue cycle track was to provide cyclists a connected east-west separated cycling facility through the Downtown and connecting to the Old East Village. The development of the Bus Rapid Transit downtown couplet plan, including Queens Avenue, displaced the opportunity to implement the Queens Avenue cycle track in the Downtown due to space constraints.

### Downtown East-West Cycling Feasibility Study

The current Downtown East-West Cycling Feasibility Study is evaluating new alternatives for a long-term east-west corridor that provides safe and connective cycling between the Downtown and the Old East Village. The four corridors identified for evaluation are Dundas Street, York Street, Dufferin Street and a King Street/Queens Avenue couplet.

An interactive public meeting was hosted on June 27, 2018 at the Aeolian Hall. The meeting attendees expressed preferences for both the King/Queens couplet and Dundas Street over the other alternatives. Additional consultation is planned for this study in coordination with the Old East Village Secondary Plan.

### Downtown Parking Strategy

In 2017, the City finalized its Downtown Parking Strategy, which included a review of existing parking conditions as well as an assessment of future parking needs within the Downtown. The assessment of parking needs accounted for the removal of parking lots due to potential developments and on-street parking under a number of existing plans such as Bus Rapid Transit and Dundas Place. The strategy identified satisfactory current parking supply, a modest need for future parking and recommended a coordinated approach to establish parking in conjunction with future development.

As part of the Bus Rapid Transit plan, King Street is proposed to have bus lanes eastbound between Ridout Street and Wellington Street and bus lanes in both directions between Wellington Street and Ontario Street. The proposed Bus Rapid Transit plans aim to minimize impacts on parking and loading zones where there is sufficient space but will remove sections of on-street parking on King Street.

## **CONSULTATION**

The process to develop alternatives to enhance safety for cyclists on King Street between Ridout Street and Colborne Street has been an accelerated detailed exercise. Each road configuration that enables cycling lanes was considered carefully due to the high frequency of transit vehicles and general traffic, combined with frequent intersections and the interactions with adjacent land uses.

### **Stakeholder Consultation**

Throughout the alternative creation and evaluation process, staff have been proactive in reaching out to interested stakeholders for feedback and comments on the infrastructure alternatives and communication tactics. The meetings and presentations with all stakeholders have been effective.

### London Transit Commission

LTC is an important partner in this project given the new transit reliance on the King Street corridor. LTC buses currently operate at 1 to 2 minute frequencies on King Street. City staff have had an ongoing dialogue with London Transit Commission (LTC) staff and met formally on August 9 and 30, 2018 to discuss the alternatives.

### Cycling Advisory Committee

City staff presented alternatives and draft communication strategy concepts to the Cycling Advisory Committee (CAC) on August 15, 2018. Committee members were very helpful providing feedback on the alternatives and communication strategy. The three priorities that committee members agreed upon were to have a dedicated bike lane, a buffer and parking adjacent to the buffer to further separate cyclists from the traffic lane.

The committee's preferred alternatives during this discussion were Alternative 2a and Alternative 3. It is important to note that Alternatives 1c and 1d were not presented because the CAC meeting was early in the alternative creation process. These alternatives became evident after further detailed evaluation and consultation. City staff subsequently distributed the additional alternatives for initial individual feedback and formal discussion at the September 19, 2018 CAC meeting.

#### Downtown London Business Improvement Association

Downtown London assisted City staff by facilitating an interactive drop-in information centre on August 21, 2018. Interested BIA members on King Street were invited to discuss their concerns and provide feedback on the alternatives. Much of the feedback provided by business owners related to current traffic operational concerns. There was a general consensus that King Street needed to have two through lanes for traffic. Several business owners east of Talbot Street expressed concern regarding reduction of on-street parking for both parking and transitional uses. The importance of the loading zones near the Tricar Renaissance Tower on the south side of King Street and the Covent Garden Market on the north side were identified. Mid-block crossings by pedestrians at the Convention Centre were also noted as a concern. Many of the business owners expressed a preference for Alternative 1d (south side cycle lane). Concerns were expressed regarding the north cycle lane alternatives and resultant interactions with the Covent Market loading zone users and concerns with traffic conflicts at the parking garage access.

#### London Cycle Link

On August 20, 2018, City staff met with members of the cycling advocacy group London Cycle Link. The Cycle Link members proposed a south side cycle track with transit islands similar to Alternative 1d. Throughout the discussion, Cycle Link members noted that safety for all road users and education along critical conflict areas is important. Staff and Cycle Link members reviewed the cross sections and were willing to take part in communication initiatives to improve safety along King Street.

#### London Police Service

City staff and London Police Services discussed how enforcement can be improved along King Street. Police Services acknowledged that because of the increased congestion and narrow pavement widths, enforcement would be best focused on distracted driving. Police Services reviewed King Street and have increased enforcement in distracted driving since the council resolution.

## CYCLING INFRASTRUCTURE EVALUATION

### Existing Conditions

The existing conditions on King Street typically comprise a four lane cross-section with the curb lanes serving on-street parking areas, loading zones and localized turn lanes. The existing bike lane is located between the parking and the general purpose vehicle lane. The cycle lane markings are sporadic through the corridor. With the rerouting of transit on King Street, some south side parking has been displaced by bus stops and buses merge in and out of the south lane and across the cycle lane. Buses sometimes encroach onto the cycling lane due to vehicle width.



## Alternative Evaluation

Eight road configuration alternatives were developed to improve safety for cyclists on King Street from Ridout Street to Colborne Street. This assessment recognizes that any recommendation would be an interim solution until the corridor is reconfigured under Bus Rapid Transit configurations. BRT is scheduled to potentially begin as early as 2021 in conjunction with King Street sewer separation in the centre of the subject area between Richmond Street and Wellington Street with additional subsequent phases.

The evaluation criteria used for the King Street bike lane improvements is similar to the previous Queens Avenue and Colborne Street feasibility studies evaluation process and is shown below.

### Alternative Evaluation Criteria

<b>1. Conflict mitigation</b> – minimizing conflicts with motorists, transit, cyclists and pedestrians	<b>5. Traffic Operations</b> – impacts to road capacity and levels of service
<b>2. Constructability</b> – ability to construct sooner and re-use construction material	<b>6. Cost</b> – anticipated implementation cost
<b>3. Parking</b> – impact to on-street parking	<b>7. Equity</b> – providing a safe and accessible road experience for users
<b>4. Transit Operations</b> – impacts to transit and loading zones	

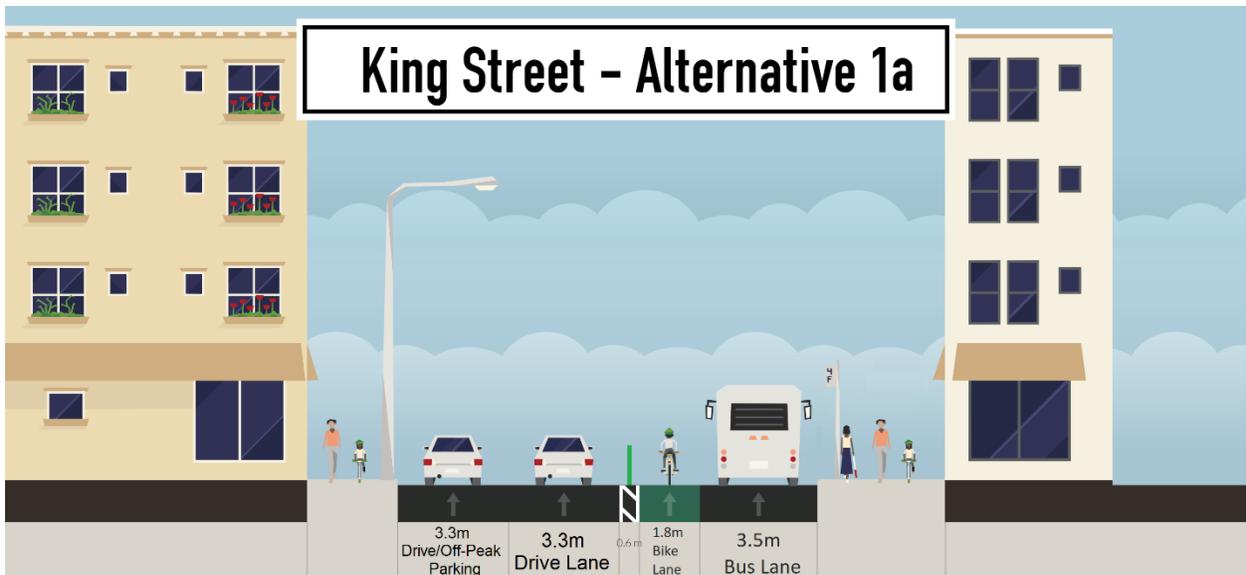
The following pages provide a brief summary of each alternative and the associated strengths and weaknesses. The typical cross sections were created looking eastbound with north on the left side of the figures. All road designs match the existing typical 12.5 m pavement width. This would minimize construction costs and reduce the impacts to road users while King Street serves as an important detour route for parallel road construction projects. This pavement width applies through much of the corridor but narrows between Talbot Street and Richmond Street; in this area the standard cross sections would require modification. The identified impacts such as parking and locating zone impacts are estimates and subject to detail design scrutiny and mitigations. All alternatives maintain the loading zone by the Covent Garden Market. Cost estimates are provided. These include the cost to reconstruct traffic signals where new signal operating phases trigger this need.

The alternatives are designated as follows:

Alternative	Description
1a, 1b, 1c, 1d	Cycling facility in the south half of King Street
2a, 2b, 2c	Cycling facility on the north side of King Street
3	Bidirectional facility on the north side of King Street

A summary of the evaluation can be seen in Appendix A.

## Alternative 1a – South Cycle Lane and Dedicated Bus Lane with Off-Peak Parking on North

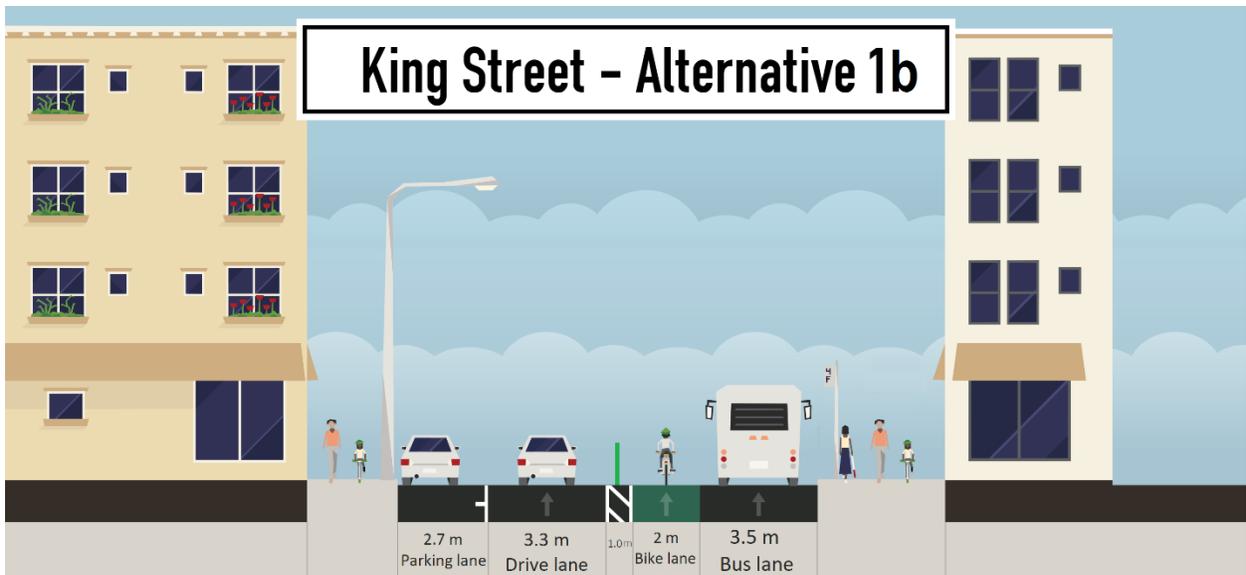


Alternative 1a would remove parking on the right/south side and create a dedicated bus-only lane on the south side with a partially buffered bike lane on the left. The left/north lane would accommodate traffic during the morning peak and parking at other times.

	Strengths	Weaknesses
<p><b>Alternative 1a</b></p> <p><b>Estimated Capital Cost = \$358,000</b></p>	<ul style="list-style-type: none"> <li>Provides a dedicated bike lane and buffer with barriers for much of corridor</li> <li>Improves Transit operations with dedicated lane</li> <li>Maintains two travel lanes</li> </ul>	<ul style="list-style-type: none"> <li>Cycling turns would be challenging</li> <li>Bus and cycle lane merge into shared space along Talbot and Richmond block</li> <li>Discontinuity in bike lane barrier separation required in two blocks to accommodate left turning buses merging across bike lane</li> <li>Estimated 47 parking spots on south side removed, 50 parking spots on north side removed during morning peak, and 2 all-day parking spots on north side removed between Ridout and Talbot for lane shift near Covent Market loading zone</li> <li>Five loading zones impacted including the loading zone by Renaissance Tower</li> </ul>

Alternative 1a presents operational challenges associated with creating a dedicated bus lane adjacent to a cycle lane along King Street from Ridout Street to Colborne Street. Cyclist turn movements would also be challenging. Between Talbot and Richmond, the pavement width narrows forcing transit and cyclists to share a dedicated space and transit would be required to yield to cyclists. There would also be less physical separation such as bollards, planters or pre-cast curbs along the block where transit and cyclists share a lane and where transit is required to turn left at Wellington Street and Richmond Street.

## Alternative 1b – South Cycle Lane and Dedicated Bus Lane with Parking on North

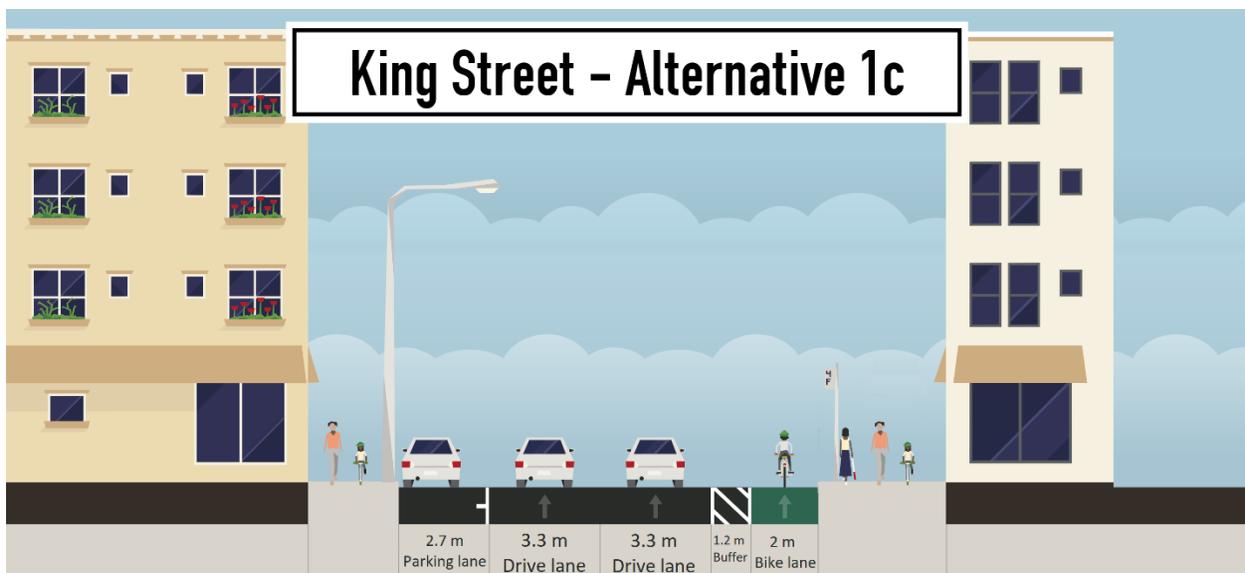


Alternative 1b is the same as 1a with the exception that the north/left lane would accommodate parking at all times.

	Strengths	Weaknesses
<p><b>Alternative 1b</b></p> <p><b>Estimated Capital Cost = \$360,000</b></p>	<ul style="list-style-type: none"> <li>• Provides a dedicated bike lane and buffer with barriers</li> <li>• Improves transit operations improved with a dedicated lane</li> <li>• Transit is not required to yield to cyclists through Talbot and Richmond block</li> </ul>	<ul style="list-style-type: none"> <li>• Cycling turns would be challenging</li> <li>• Discontinuity in bike lane barrier separation required in two blocks to accommodate left turning buses merging across bike lane</li> <li>• Creates significant congestion by reducing traffic capacity to one lane and reduces intersection level of service</li> <li>• Estimated 47 parking spots on south side removed, 3 parking spots on north side removed between Talbot and Richmond due to narrow pavement width, and 19 parking spots on the north side between Waterloo and Colborne</li> <li>• Two loading zones impacted including the loading zone by Renaissance Tower</li> </ul>

Alternative 1b presents challenges with providing a dedicated bus lane and cycle lane with one through lane for traffic. Reducing traffic capacity to one through lane will result in extensive traffic delays and negatively impact the level of service at each intersection. There is more physical protection for cyclists when compared to alternative 1a, as transit and cyclists aren't required share a lane between Talbot and Richmond.

## Alternative 1c – South Cycle Lane with Transit Ramps and Parking on North

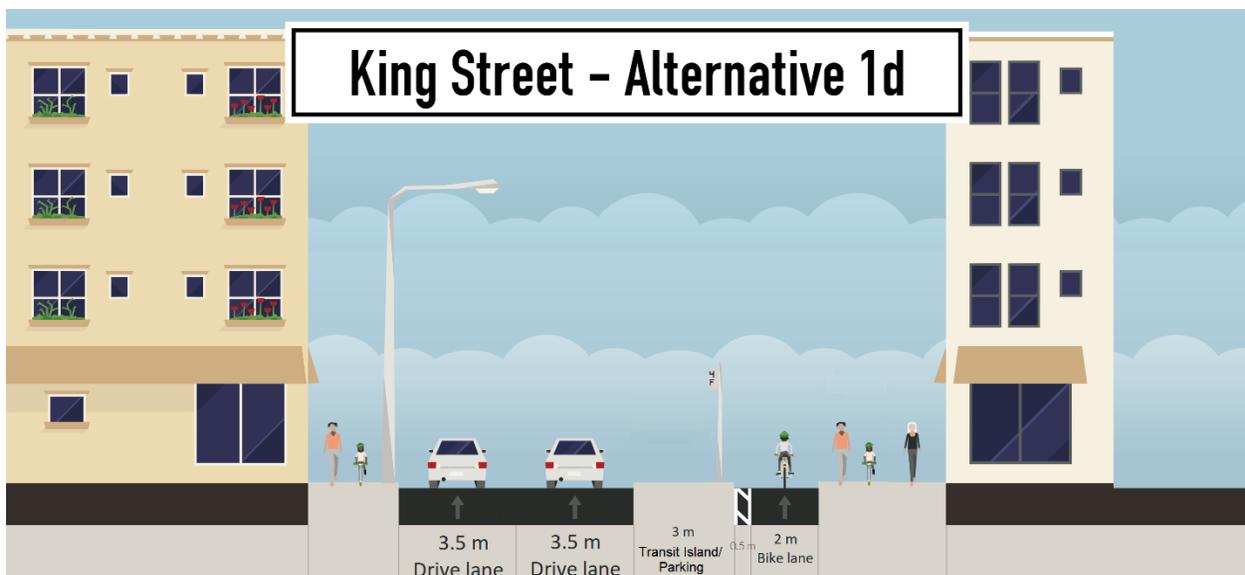


Alternative 1c proposes two general purpose lanes and a curb side cycle track. Buses would stop in the right lane and transit riders would board and alight across the cycle track which would be raised to curb level at these locations.

	Strengths	Weaknesses
<p><b>Alternative 1c</b></p> <p><b>Estimated Capital Cost = \$607,000</b></p>	<ul style="list-style-type: none"> <li>• Provides a dedicated bike lane and buffer with barriers</li> <li>• Intuitive position for cycling facility</li> <li>• Avoids interaction between cyclists and left turning bus and vehicle movements at Wellington and Richmond Streets</li> <li>• Less interruptions in physical separation</li> <li>• Maintains two travel lanes</li> </ul>	<ul style="list-style-type: none"> <li>• Significant concern with conflicts between cyclists and passengers boarding/alighting buses</li> <li>• Additional construction required for raised cycling facility through bus stops</li> <li>• Significant negative impacts to cyclist travel</li> <li>• Estimated 28 parking spots on south side removed, 3 parking spots on the north side removed between Talbot and Richmond, and 19 parking spots on the north side removed between Waterloo and Colborne</li> <li>• Two loading zones impacted including the loading zone by Renaissance Tower</li> </ul>

Alternative 1c provides an intuitive position for a cycling facility, as it is adjacent to the south curb. Cyclists will feel the most comfortable cycling adjacent to the curb, especially in a separated facility. This alternative removes the conflicts with left turning buses at Wellington Street and Richmond Street. The most significant concern for this alternative is the high frequency of conflicts between transit passengers and cyclists. London transit Commission expresses significant concerns regarding transit riders boarding and alighting immediately into a bike lane. Additionally, the bus accessibility ramp would need to be mobilized across the bike buffer when used. This approach will also result in some delays for cyclists as they would be required to frequently stop for transit passengers crossing and potentially waiting on the cycle track. Cyclists may be required to make two-stage left turns similar to pedestrians which may require northbound right-turn-on-red prohibitions on cross streets. .

## Alternative 1d – South Cycle Lane with Raised Transit Island and Parking on South

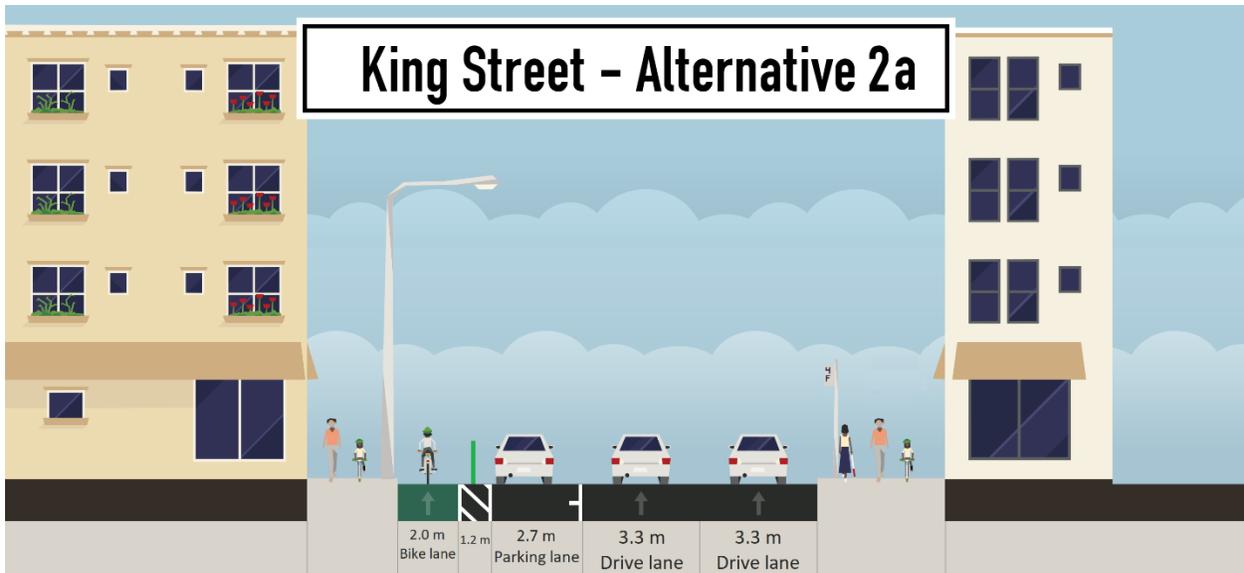


Alternative 1d proposes a similar cycle track configuration as Alternative 1c but with an island to accommodate waiting transit riders between the cycle track and travel lane. Parking is located adjacent to the cycle track between the transit island locations.

	Strengths	Weaknesses
<p><b>Alternative 1d</b></p> <p><b>Estimated Capital Cost = \$582,000</b></p>	<ul style="list-style-type: none"> <li>• Provides a dedicated bike lane and buffer with barriers</li> <li>• Intuitive position for cycling facility</li> <li>• Provides additional separated space with parking lane adjacent to bike lane</li> <li>• Avoids interaction between cyclists and buses for bus left turning movements at Wellington and Richmond Streets</li> <li>• Less interruptions in physical separation</li> <li>• Maintains two travel lanes</li> </ul>	<ul style="list-style-type: none"> <li>• Additional construction as raised transit island is required</li> <li>• Conflicts between cyclists and passengers boarding/alighting buses</li> <li>• Estimated 52 parking spots on north side removed and 23 parking spots on the south side removed for transit stop platform locations</li> <li>• Four loading zones impacted</li> <li>• Minor shifting of some transit stops</li> </ul>

Alternative 1d provides an intuitive position for a cycling facility, as it is adjacent to the south curb. Having parking adjacent to the cycle lane further separates cyclists from moving traffic. Cyclists will feel the most comfortable cycling adjacent to the curb, especially in a separated facility. This alternative removes the conflicts with left turning buses at Wellington Street and Richmond Street. Conflicts between transit riders and cyclists exist similar to Alternative 1c but this alternative is an improvement because it proposes a bus stop refuge for passengers who are waiting to board the bus. This provides the best operations for cyclists; however, cyclists may be required to make left turns in two stages similar to a pedestrian and this may require northbound right-turn-on-red prohibitions on cross streets. This option was endorsed by London Cycle Link and several BIA meeting attendees, is supported by LTC and meets the three criteria provided by the Cycling Advisory Committee.

## Alternative 2a – North Cycle Lane with Parking on North



Alternative 2a proposes a cycle track on the left/north side with parking in the adjacent lane.

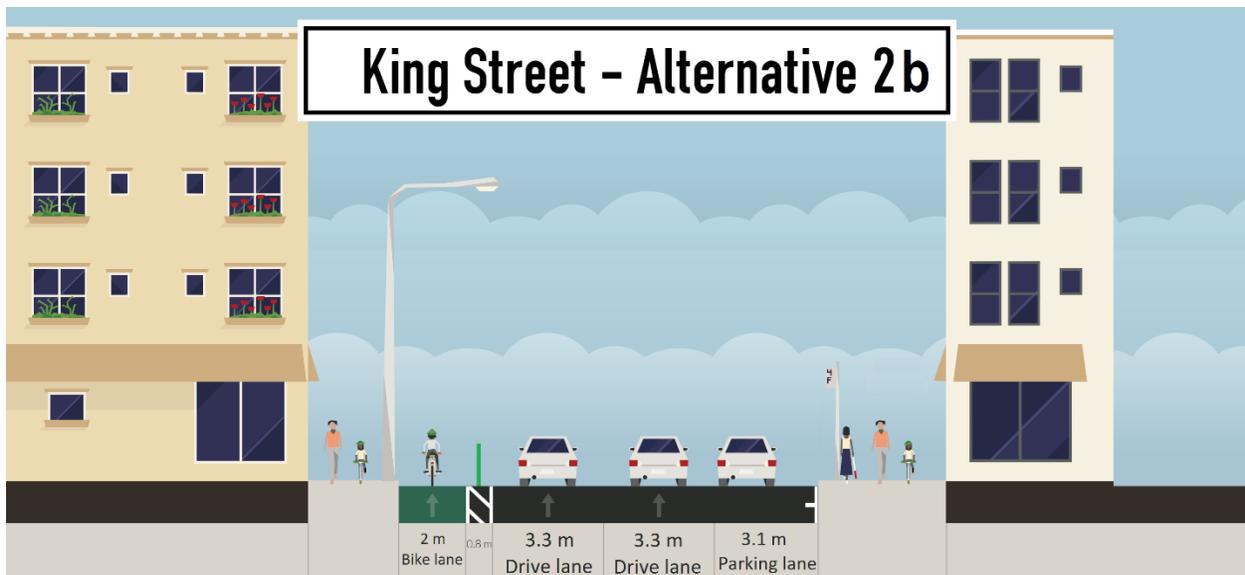
	Strengths	Weaknesses
<p><b>Alternative 2a</b></p> <p><b>Estimated Capital Cost = \$ 1,571,000</b></p>	<ul style="list-style-type: none"> <li>• Provides a dedicated bike lane and buffer with barriers</li> <li>• Provides additional separated space with parking lane adjacent to bike lane</li> <li>• Avoids interaction between cyclists and buses during loading/alighting</li> <li>• Maintains two travel lanes</li> <li>• Transit operations improved as weaving between parked cars is eliminated and bike lane relocated away from through lane with bus</li> </ul>	<ul style="list-style-type: none"> <li>• More construction as traffic signal reconstructions are required to provide a cyclist phase separate from left turn vehicle movements</li> <li>• Conflicts with left turning buses reducing cyclist protection</li> <li>• Estimated 28 parking spots on south side removed, 3 parking spots removed on the north between Talbot and Richmond, and 19 parking spots on north side removed between Waterloo and Colborne</li> <li>• Two loading zones impacted, including loading zone at Renaissance Tower</li> <li>• Complications for north/south transition of bike lane at ends of project</li> <li>• Conflicts with Covent Garden Market loading zone operations</li> </ul>

Alternative 2a provides a cycling space separated from transit operations. Having parking adjacent to the cycle lane further separates cyclists from moving traffic. The north cycle lane requires Covent Market loading zone users to cross the cycle track.

This alternative presents challenges at both ends of this treatment. The Ridout/King intersection would require cyclists to transition from a south bike lane to the north side. This could result in confusion and delays for cyclists. The transition back from north to south could occur at Wellington Street or Colborne Street. Transitioning at Wellington Street would avoid the left turn conflicts but would require an abnormally large bike box treatment.

The construction would require a full rebuild of the traffic signals to include a separate cycling signal phase will require to accommodate the left side cycle track.

## Alternative 2b – North Cycle Lane with Parking on South



This alternative is similar to Alternative 2a but with parking on the right/south side instead of adjacent to the cycle track.

	Strengths	Weaknesses
<p><b>Alternative 2b</b></p> <p><b>Estimated Capital Cost = \$ 1,571,000</b></p>	<ul style="list-style-type: none"> <li>Provides a dedicated bike lane and buffer with barriers</li> <li>Avoids interaction between cyclists and buses during loading/alighting</li> <li>Maintains two travel lanes</li> </ul>	<ul style="list-style-type: none"> <li>Traffic signal reconstructions are required in order to provide separate cyclist phase from left turn vehicle movements</li> <li>Conflicts with left turning buses reducing cyclist protection</li> <li>52 parking spots on north side removed, 13 parking spots removed on the south side between Talbot and Richmond</li> <li>Impacts four loading zones</li> <li>Complications for north/south transitions of bike lane at ends of project</li> <li>Conflicts with Covent Market loading zone operations</li> </ul>

Alternative 2b is similar to alternative 2a with parking shifted to the south side. This alternative, requires the same awkward north/south side cycling transitions as Alternatives 2a and 2b. The north cycle lane also requires Covent Market loading zone users to cross the cycle track.

Similar to Alternative 2a, this alternative would be challenging to construct as the construction at each intersection to include a separate cycling signal phase would require a full rebuild of the traffic signals. A separated cyclist phase is required because having the cyclists along the left side of traffic is unconventional and concerns have been experienced in similar situations in other jurisdictions.

## Alternative 2c – North Cycle Lane with Parking on North and South



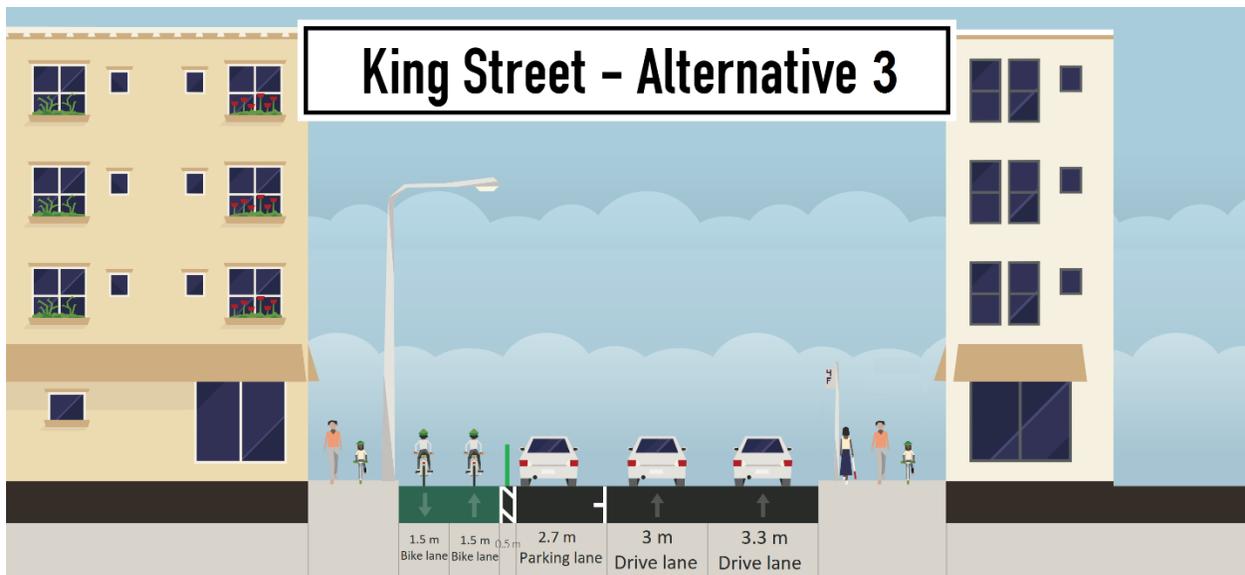
This alternative is similar to 2a and 2b but with parking on both sides and one through lane.

	Strengths	Weaknesses
<p><b>Alternative 2c</b></p> <p><b>Estimated Capital Cost = \$ 1,570,000</b></p>	<ul style="list-style-type: none"> <li>• Provides a dedicated bike lane and buffer with barriers</li> <li>• Avoids interaction between cyclists and buses during loading/alighting</li> <li>• Removes minimal parking spots. 3 parking spots on the north and 13 parking spots on the south between Talbot and Richmond</li> <li>• Provides additional separated space with parking lane adjacent to bike lane</li> </ul>	<ul style="list-style-type: none"> <li>• Reduces traffic capacity to one lane for traffic and bus stops resulting in significant congestion</li> <li>• Additional construction as traffic signal reconstructions are required in order to provide separate cyclist phase from left turn vehicle movements</li> <li>• Conflicts with left turning buses reduce cyclist separation</li> <li>• No anticipated loading zone impacts</li> <li>• Complications for north/south transitions of bike lane at ends of project</li> <li>• Conflicts with Covent Market loading zone operations</li> <li>• Negatively impacts transit capacity causing delays for other commuters with one shared through lane</li> </ul>

Alternative 2c retains parking on both sides and reduces traffic capacity to one through lane. Reducing the traffic capacity to one through lane will drastically reduce the level of service throughout this corridor and result in long delays. This alternative, requires the same awkward north/south side cycling transitions as Alternatives 2a and 2b. The north cycle lane also requires Covent Market loading zone users to cross the cycle track.

This alternative would also be challenging to construct as the construction at each intersection to include a separate cycling signal phase will require a full rebuild of the traffic signals. A separated cyclist phase is required because having the cyclists along the left side of traffic is unconventional and concerns have been experienced in similar situations in other jurisdictions.

## Alternative 3 – Two Way Cycle Track with Parking on North



This alternative proposes a two-way cycle track on the right/north side with parking in the adjacent lane.

	Strengths	Weaknesses
<p><b>Alternative 3</b></p> <p><b>Estimated Capital Cost = \$1,715,000</b></p>	<ul style="list-style-type: none"> <li>• Provides a dedicated bike lane and buffer with barriers for eastbound and westbound cyclists</li> <li>• Avoids interaction between cyclists and buses during loading/alighting</li> <li>• Maintains two travel lanes</li> <li>• Improves transit operations slightly improved as weaving between parked car is removed</li> <li>• Improves cycling connection to the TVP</li> </ul>	<ul style="list-style-type: none"> <li>• Conflicts with left turning buses reducing cyclist protection</li> <li>• Introduces new unconventional conflicts with westbound cyclist movements, especially at two parking garage entrances</li> <li>• Requires significant rebuild of all intersections and traffic signals to accommodate westbound cyclists</li> <li>• Increased conflicts with loading zone by Covent Garden Market</li> <li>• 28 parking spots on south side removed, 3 parking spots on the north side removed between Talbot and Richmond, and 19 parking spots on the north side removed between Waterloo and Colborne</li> <li>• Impacts two loading zones, including the loading zone at Renaissance Tower</li> </ul>

Alternative 3 is not recommended for this interim situation as the number of conflicts increase and the construction cost is significant.

The number of accesses and intersections along King Street present concern for a bi-directional cycling facility. The intersections along King Street would need to be rebuilt in order to accommodate the additional phases required for a westbound cycle lane.

This alternative would be challenging to construct as there is significant construction required at all intersections to be able to incorporate a westbound cycling facility.

## Preferred Alternative

Alternative 1d is recommended as a right/south side cycle lane along the curb is most intuitive alternative for cyclists and motorists. It can provide optimal separation for the cycle track while maintaining two through lanes for traffic. The parking impacts with this proposal are significant; however, the loading zones near the Covent Garden Market and Renaissance Tower identified as high priority during the BIA business owner meeting are retained.

The picture below illustrates how the raised transit island and parking occupy space adjacent to the south cycle lane.



Below is a previously prepared visual rendering of how the transit islands had been planned to be incorporated into the Queens Avenue cycle track. This is a similar configuration to the proposed King Street transit islands with a one-way cycle track.



The proposed improvements will enhance the eastbound cycling currently facilitated on King Street. Westbound cycling is achieved via other routes. Queens Avenue is the other half of the King couplet that may also be receiving detoured traffic. Queens Avenue is currently supplemented by Dufferin Avenue, a parallel high-use cycling route one block north. Civic Administration has not received similar concerns regarding westbound cycling on Queens Avenue. As such, interim westbound improvements are not deemed necessary, considering the pending east-west bikeway recommendations and completion of construction on Dundas Place.

## Implementation

The recommended alternative includes coordinated civil works to construct the raised transit islands and pavement marking adjustments. Implementation of pavement markings is weather-dependent. Additionally, these types of contractor services are challenging to schedule late in the construction season. Therefore, accelerated implementation is limited to Spring/Summer 2019.

Staff scrutinized the implementation timing with a local contractor to explore whether any alternatives could be implemented in 2018. Only alternatives 1a and 1b create a possibility for a partial implementation in 2018. However, confidence levels for successful implementation in 2018 are low. This would be highly weather dependent and implementation of important green bicycle and red bus lane pavement markings required for these alternative would likely not be installed until the following spring. Due to the risk and likely partial implementation, this is not recommended.

Construction of the preferred alternative will be challenging with the current traffic detour dependency and congestion on King Street. The work will be scheduled to minimize impacts in coordination with the other capital projects.

## Financial Considerations

### Expenditures

The construction estimate for the preferred alternative 1d is \$582,000. Approximately \$115,000 of the cost estimate represents items that could likely be salvaged and reused on future cycling projects upon the termination of this interim King Street solution.

All initial cost estimates have assumed the implementation of bollards similar to what was recently implemented on the Colborne Cycle Track. Planter boxes will be assessed for implementation where feasible in the buffer areas of the proposed cycle track. This would incur a minor incremental costs and additional operating costs. Community partnerships could be possible to assist.



### Funding

The bike lane improvements proposed to be implemented on King Street in 2019 can be funded through the Cycling Facilities Capital Account. This project is able to be funded under this account as previous projects have been successfully completed under budget and future cycling projects can be reprioritized.

The incremental annual operational costs associated with the maintenance of the recommended cycling facility are estimated at \$39,600.

The cycling improvements on King Street would accelerate the removal of on-street parking envisioned under the Downtown Parking Strategy. The strategy identified an adequate downtown parking supply so displacement to other local parking locations is expected. Displacement locations would include on-street and to private and City-owned lots. Impacts to parking revenues are difficult to estimate and can be assessed as this and other projects progress.

## COMMUNICATIONS AND ENFORCEMENT

### Communications

To develop an interim plan to enhance communication efforts to improve drivers' awareness of cyclists using King Street and the safety of all road users, the City of London met with the previously identified key stakeholders to better understand their perspective on current challenges and opportunities to better inform the public. Through engagement, insights gained from cyclist submissions at the July 17 Civic Works Committee meeting and comments on social media, we learned that cyclists would like to see more education about:

1. Cyclists' rights on the road
2. Safely navigating congested urban areas
3. How cycling infrastructure improves road safety for all

This feedback, combined with demographic data obtained about our downtown and neighbourhoods in close proximity to the TVP, was considered as part of the campaign development process.

In alignment with London's Road Safety Strategy, interim communications will focus on encouraging safe road user behaviours as we work towards improving infrastructure. The first phase of communication will be tailored to address some of the key points of conflict identified by the local cycling community and aim to increase awareness about behaviours that will result in a safe roadway for all. Some examples of conflict points and how the City is raising awareness include:

#### 1. **Dooring**

The City of London will work with our partners at CAA to distribute mirror stickers as part of a parked car blitz to remind drivers to shoulder check before opening their door.

#### 2. **Conflicts with buses**

The City of London will work with the London Transit Commission (LTC) to enhance training activities and increase yield-to-bus reminders.

#### 3. **Intersections**

The City of London will create warning signs that encourage drivers to look for cyclists before proceeding through key intersections.

These initiatives will be complimented with on-street engagement and the promotion of road safety resources (education) along King Street and online. The City will work with the London Police to ensure communications are consistent with their short-term enforcement plan.

Until the infrastructure is modified, City staff will continue to liaise with Downtown London and London Middlesex Road Safety Committee, as well as volunteers from the cycling community, to refine messaging and ensure tactics implemented support Vision Zero, highlight vulnerabilities associated with active modes of transportation and effectively share the stories of real cyclists who commute on King Street.

Once the alternative for infrastructure has been selected, City staff will continue to work with the local cycling community to further refine the communications plan.

## **CONCLUSION**

The rerouting of eastbound transit from Dundas Street to King Street, combined with the temporary construction closures of Dundas Street and York Street has resulted in concerns from cyclists. Current conditions will be transitional as Dundas Place construction is completed in late 2019, downtown sewer separation projects advance and Bus Rapid Transit redefines the King Street corridor potentially beginning as early as 2021.

Staff created and evaluated eight alternatives with various cycling facility, parking zone, loading zone and travel lane configurations that fit within the existing road width. Allocations of space in a confined corridor like King Street involves trade-offs. The assessment was complimented by consultation with LTC, Downtown London businesses, Cycling Advisory Committee, and London Police.

The alternatives with the cycling facility adjacent to the south curb ranked highest in the evaluation in recognition of the conventional cycling location consistent with road user expectations. Of these two alternatives, Alternative 1d that identifies transit islands at bus stops with parking between the islands is recommended. Alternative 1d reduces the conflict risk between transit riders and cyclists, has the support of LTC and has a slightly lower cost estimate than Alternative 1c. Alternative 1d is recommended for implementation.

Alternatives 1a and 1b require less capital investment than Alternative 1d but introduce significant operational challenges between transit and cyclists. These alternatives create awkward cyclist turn movements and decrease the amount of physical separation for cyclists where buses need to merge left across the bike lane. Separation was one of the key priorities from the Cycling Advisory Committee.

The north side cycling facilities would require additional traffic signal phases which would trigger the need for traffic signal reconstruction at most intersections at much greater cost. They would also create awkward transitions at each end of the project. Additionally, a north side bidirectional cycling facility would introduce unconventional conflicts, particularly at the parking garage locations, which has created concerns in other jurisdictions and is not recommended for an interim condition.

The acceleration of parking displacements is of concern to some business owners. With Council approval, the design phase of the project would scrutinize the parking and loading zones further in order to minimize and mitigate impacts. Several other design aspects will also require scrutiny including cyclist left-turn movements, transit stop modifications and coordination of transit islands with existing accesses.

Alternative 1d has an anticipated capital cost of \$582,000 and an ongoing operating cost of \$39,600. Approximately \$115,000 of the cost estimate represents items that could likely be salvaged and reused for future cycling projects. The bike lane improvements on King Street are proposed to be implemented in early 2019 and funded through the Cycling Facilities Capital Account.

Implementation is desired as soon as possible and would be targeted as early in 2019 as possible. This would include coordination with other downtown construction projects that are currently relying on this corridor as a detour route in order to mitigate disruptions to road users. In the meantime, complimentary communications tactics are being implemented to increase safety awareness with respect to cyclist interactions with parked cars, buses and intersection traffic.

**Acknowledgements**

This report was prepared by Peter Kavcic, P.Eng. and Andrew Giesen, CET of the Transportation Planning & Design Division and Megan Hutchison of the Communications Division with input from others in the Environmental and Engineering Services Department.

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Attach: Appendix A            King Street Evaluation Summary

- c:            Katie Burns, London Transit Commission
- Sergeant Sean Harding, London Police Service
- Janette MacDonald, Downtown London
- Cycling Advisory Committee

**Appendix A  
King Street Evaluation Summary**

<b>Summary of King Street Evaluation</b>					
OPTION	Ridout to Richmond	Richmond to Wellington	Wellington to Colborne	Total Score	Rank
1A	15	13	19	47	4
1B	16	13	18	47	4
1C	17	18	18	53	2
1D	19	20	18	57	1
2A	15	15	18	48	3
2B	12	12	17	41	5
2C	10	12	15	37	6
3	10	12	13	35	7

\* Scores are established using the seven evaluation criteria: Conflict mitigation, Constructability, Parking, Transit Operations, Traffic Operations, Cost and Equity